

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
21 July 2005 (21.07.2005)

PCT

(10) International Publication Number  
**WO 2005/065281 A3**

(51) International Patent Classification<sup>7</sup>: **B22F 3/00**,  
B32B 3/02, H01B 1/02, H01L 21/763

(21) International Application Number:  
PCT/US2004/043458

(22) International Filing Date:  
23 December 2004 (23.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/533,618 31 December 2003 (31.12.2003) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

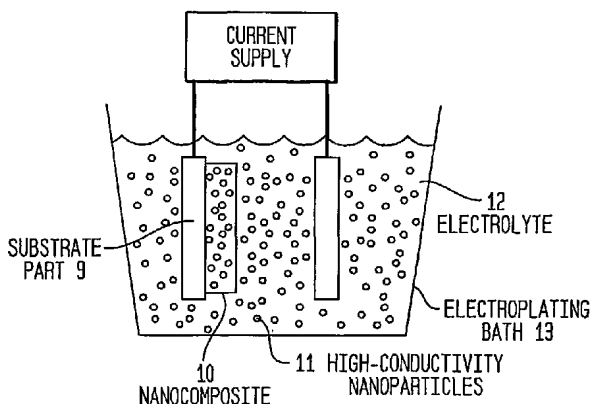
**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
10 November 2005

[Continued on next page]

(54) Title: ARTICLES COMPRISING HIGH-ELECTRICAL-CONDUCTIVITY NANOCOMPOSITE MATERIAL AND METHOD FOR FABRICATING SAME



(57) **Abstract:** This invention discloses novel nanocomposite material structures which are strong, highly conductive, and fatigue-resistant. It also discloses novel fabrication techniques to obtain such structures. The new nanocomposite materials comprise a high-conductivity base metal, such as copper, incorporating high-conductivity dispersoid particles that simultaneously minimize field enhancements, maintain good thermal conductivity, and enhance mechanical strength. The use of metal nanoparticles with electrical conductivity comparable to that of the base automatically removes the regions of higher RF field and enhanced current density. Additionally, conductive nanoparticles will reduce the surface's sensitivity to arc or sputtering damage. If the surface is sputtered away to uncover the nanoparticles, their properties will not be dramatically different from the base surface. Most importantly, the secondary electron emission coefficients of all materials in the nanocomposite are small and close to unity, whereas the previously used insulating particles can produce significant and undesirable electron multiplication.

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